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STRUCTURES FOR EDGE TREATMENT AND FOR DECORATION
OF COUNTERS AND PANELS, AND FOR THE ASSEMBLY THEREOF

Field And Background of the Invention:

The present invention relates to edge and joint treatment for panels or sheets. More particularly, the invention is directed to a series of versatile, multi-functional extrusions, etc., of metal or of plastics materials, or other compositions for attachment to lineally extending end sections or faces of panels or sheets including counter tops, table tops, shelving and cabinet walls.

The extrusions pertain, generally, to cabinetry, and more specifically to an edge treatment for plywood, particle board, glass and related structures. The extrusions of the present invention are readily securable to structures to provide multiple benefits and enhancements, both physically and aesthetically, and beyond benefits accorded through other edging treatments.

Prior art edgings of plastics materials are, in general, securable only through relatively weak frictional forces. Edgings of wood fail to cover surface chipping or any rough edges of the sheet goods to which they may be attached. Moreover, the attachment process is exceedingly time demanding, requiring additional treatments such as gluing, nailing, putty and sanding. Many of the presently employed aluminum or steel edgings are objectionally frail or flimsy, with exposed securing screws.

It is, accordingly, a principal aim and object of the present invention to obviate many of the inadequacies and shortcomings of prior art edge treatments and the like, and to provide improved extrusions and improved methods for their ready, rapid and reliable securement in place, to ensure important time-saving advantages as well as structural and aesthetic benefits not heretofore fully realized.

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SUMMARY IF THE INVENTION

In preferred embodiments of the invention the extrusions cover raw edges of sheet goods or panels, join such sheets to one another, and stabilize as well as enhance the load-carrying capacity of the sheets. Additionally, the extrusions accent artistically the structural sheets to which they are attached.

Conveniently, the extruded "edging" of the invention is attached by physically inserting the sheet goods or panels into a cooperating U-shaped channel opening rearwardly of or at the back side of the extruded edging.

In preferred embodiments of the invention, screws may be used to augment attachment of the extruded form to the sheet or panel. To this end, in preferred embodiments of the invention, the extrusion is formed with a wall which abuts the lineally extending edge of the sheet or panel member of the assembly. Conveniently, a hole is drilled through the wall of the extrusion to permit inserting a screw to enter and physically to engage within the sheet itself.

As an alternative technique, the band-like elongate extrusion may be glued to the end face of the sheet or panel. Other fastening agents, such as staples, may also be used.

An important feature of the invention, importing broad versatility and enhanced general utility to the extrusions, is the provision of shims of varied and selectable thickness and configuration. When necessary, the shims are effectively used to take up any excess "height" or space remaining in the channel of the extrusion before or after the sheet or panel has been inserted in place.

In preferred embodiments of the invention, the extrusion is formed with a principal, U-shaped, channel-like opening defined by spaced parallel arms coextensive

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with the extrusion, for receiving a lineally-extending end sector of a sheet or panel therewithin. Opposite the U-shaped, panel-receiving opening, the extrusion is formed with a lineal slot for receiving a ribbon-like decorative band therein to extend along a lineal expanse of the sheet-mounted extrusion .

In another embodiment of the invention the extrusion is integrally formed with a depending, generally L-shaped leg for imparting increased strength to the extrusion, and which also permits the ganging of strips through utilization of a clasp to attach two separate strips in a parallel mode.

In yet another embodiment of the invention the lower leg is eliminated so as to facilitate the use of the extrusion on an outside corner or edging, when clamping action is not required.

In another embodiment of the invention both legs of the extrusion are removed, allowing use of the extrusion to cover joints between sheets or panels, and concurrently "accenting" or decorating the assembly.

In a somewhat more elaborate or sophisticated embodiment of the invention separate pairs of legs are provided. The legs define a pair of channels angled with respect to one another, thus allowing separate sheets to be attached to one another, at right angles, or at some other angles, as in the fabrication and assembly of a corner-defining structure.

Other and further objects, features and advantages of the invention will be understood from the following detailed description considered in conjunction with the drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

Novel features of the invention contributing to the utilities and advantages thereof are set forth in the claims appended hereto. The arrangement of the cooperating physical

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and structural elements of the extrusions of the invention and their interrelation and specific functions will be evident and understood from the following description considered in conjunction with the accompanying drawings:

FIGURE 1 is a fragmentary, perspective view showing an upper portion of a cabinet a top protruding edge of which is sheathed in an overlying, generally U-shaped extrusion, in accordance with the present invention;

FIGURE 2 is a cross-sectional view taken substantially on the lines 2-2 of Figure 1, and showing a first extrusion of the invention secured to overlie and sheathingly to embrace a protruding top edge of the cabinet; and, additionally, a second extrusion of the invention coupled to and capping an outwardly-directed open face of the first extrusion;

FIGURE 3 is a view similar to Figure 2 but showing the use of a shim for taking up the free or "extra" space between the jaws of the first extrusion when the jaw spacing is greater than a thickness dimension of the protruding edge of the panel or top structure to which the first extrusion of the invention is to be affixed;

FIGURE 4 is a perspective cross-sectional view of a lineal segment (shown as a "facing" component in the assembly in Figures 2 and 3) of an extrusion having a pair of vertically spaced L-shaped opposed arms for engaging and mechanically coupling with cooperating upper and lower L-shaped components of the first extrusion, shown in Figures 2 and 3; and integrally formed with a vertically extending planar face plate for covering an open face portion of the first extrusion;

FIGURE 5 is a fragmentary perspective view of another extrusion, fashioned after the second extrusion (Figure 4) but formed with a curved or arcuate wall section for overlying and covering an open face of the first, sheet-engaging or counter-engaging extrusion;

FIGURE 6 is a fragmentary, perspective view showing a lineal segment of the first extrusion shown in Figures 2 and 3, and in which the longitudinal groove extending

along a lineal expanse of the extrusion may also serve to accommodate a decorative band or ribbon-like element to be seated therewithin;

FIGURE 7 is a fragmentary, perspective view of an extrusion similar to that shown in Figure 6, but including, in addition, an integrally-formed, generally L-shaped section depending from a bottom plate of the panel-gripping portion at an end of the plate remote from the principal channel, and terminating in an upwardly-projecting rib-like bead;

FIGURE 8 depicts an extrusion similar to that shown in Figure 6, but having only an upper flange, and no lower flange;

FIGURE 9 depicts an extrusion consisting of a modification of that shown in Figure 8, the single principal top flange having been dispensed with;

FIGURE 10 depicts a modification of the extrusion of Figure 7, in which the principal top flange has been dispensed with;

FIGURE 11 is a perspective, fragmentary view of a lineal segment of an extrusion for connecting together two panels or sheets disposed at right angles to one another, the extrusion including walls defining three longitudinally disposed channels including two channels back-to-back and at the same level and opening oppositely, and a third channel therebelow and opening normally of one of the other channels;

FIGURE 12 depicts an extrusion for covering and for grippingly embracing a longitudinally extending end or edge portion of a sheet or panel, the extrusion having a first channel including spaced, generally planar upper and lower walls, and a second, oppositely opening channel with a pair of upper and lower walls arcuately curved toward one another;

FIGURES 13 through 16 are perspective views of lineal segments of elongate shims of various cross-sectional shapes or configurations for use with other extrusions of the invention;

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FIGURE 17 is a perspective view of a segment of a generally C-shaped extruded channel finding utility as a coupler or joinder for two cooperating extruded sections, in accordance with the present invention;

FIGURE 18 is a fragmentary perspective view of a clasp-like extrusion for joining two boards or panels to one another at an inside corner junction thereof;

FIGURE 19 is a fragmentary perspective view of an extrusion for joining in-line boards, sheets, or panels to one another;

FIGURE 20 is a fragmentary perspective view of an extrusion similar to that shown in Figure 9, but with a leg extension for strengthening a component connected thereto; and

FIGURE 21 is a fragmentary perspective view of an extrusion defining a clasp having legs forming a joinder for making a connection of panels at a 90 degree angle.

DESCRIPTION OF ILLUSTRATED EMBODIMENTS

The aims, objects and advantages of the invention are achieved by providing a family of principal extrusions, preferably fabricated as extruded aluminum, aluminum alloys and other metals and their alloys. In one principal embodiment of the invention channel-defining selectable extrusions are secured in tensioned and firmly gripping engagement with outwardly extending edge or end structures of a counter top, table, cabinet or the like, to cover at least the end faces thereof. In some embodiments of the invention screws may be used for effecting even more positive securement of the elongate extrusion to the edge of the supporting countertop, table, cabinet, or other structure.

In other preferred embodiments of the invention secondary extruded components coextensive lineally with the primary extrusion, are employed to cover and to shield visually any auxiliary mechanical elements such as screws used to provide enhanced

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securement of the principal extrusion to its supporting substrate. In yet other embodiments of the invention the outwardly presented face of the principal extrusion is conformed to provide a lipped channel or the like. The wall of the channel is conveniently adapted to retain a coextensive plate-like strip or ribbon serving decorative purposes or providing improvement in the general aesthetics of the assembly. In yet other embodiments of the invention, physically distinct secondary extrusions are secured to the principal extrusions, seating within and extending along a coextensive lineal expanse thereof.

In yet other embodiments of the invention the principal extrusion is integrally formed and configured with four walls, including walls normal to one another, to provide two channels which open at right angles or 90 degrees to one another. In the arrangement described the extrusion serves as a joinder for two panels, boards or structural sheets presented to one another to form or to define a corner. Separate extruded decorative strips can still be accommodated to enhance the overall appearance of the complete assembly.

Referring now more particularly to the drawings, and initially to Figures 1 through 4, and 6, for purposes of disclosure and not in any limiting sense, several preferred embodiments of the extrusions of the invention, as elements of an assembly, are depicted. The fragmentary perspective view of Figure 1 shows an assembly 20 including an upper portion 24 of a cabinet 30 having a front wall 32 surmounted by a top 36 comprising a sheet or panel. Extending into the cabinet 30 through a front wall 32 thereof is a drawer 38 to which is secured a handle 40. Neither the cabinet 30 nor its accessories or enhancements constitute novel elements of the invention.

The top 36 of the cabinet 30 has a forwardly protruding edge 44 (Figure 2) over which an elongate extrusion 46 of the invention is sheathed to extend along the lineal expanse of the cabinet 30. As shown in Figures 2 and 3, the elongate extrusion 46 has a transverse, vertically extending body 50 having a forwardly directed plate-like wall 52 for abutment against an outwardly presented end face 54 of the protruding edge portion 44 of

the cabinet top or panel 36. At upper and lower extremities thereof the extrusion 46 is formed with a pair of essentially parallel upper and lower rearwardly-directed arms 58 and 60. (Figures 2 and 6). The latter form an elongate channel 62 into which the protruding edge 44 of the cabinet top 36 extends and is frictionally held by the sandwiching, embracing and clamping arms 58 and 60. The body 50 is formed at rearward upper and lower extremities thereof with cut-away portions defining rearwardly-opening grooves 62 and 64. The latter serve to receive ends of shims 66 (Figures 6, 13 through 16). The latter find utility when the extrusion 46 is to be affixed to a table top and the like having a vertical thickness dimension somewhat less than the spacing between upper and lower arms 58 and 60 of the extrusion 46 (Figure 3).

Referring further to Figures 2, 3 and 6, integrally formed with the body 50 of the extrusion 46 as forwardly directed extensions of the arms 58 and 60, are a pair of upper and lower webs 68 and 70 terminating in relatively short flanges 72 and 74 essentially normal to and extending toward one another to define downwardly and upwardly opening elongate slots 78 and 80 coextensive with a lineal expanse of the extrusion 46. Referring again to Figures 2 and 3, the body 50 of the extrusion 46 is formed along its length and on a side thereof opposite its plate-like wall 52 with a channel-like depression 90. There is thus formed a longitudinally extending, generally centered thinned-wall section 92 which is piercable for entry of a screw 96 therethrough for threadedly engaging the edge 44 of the table top 30, to enhance the securement of the extrusion 46 thereto.

Referring further to Figures 2 and 3, and to Figure 4, there is provided, for use in conjunction with the primary, principal extrusion 46, a second extrusion 100, a lineal segment of which is depicted in Figure 4. As shown, the second extrusion 100, which is used coextensively with the first, principal extrusion 46, constitutes a lineally extending plate-like band, ribbon, accent strip, or decorative facing 102 for abutting and covering the outwardly presented flange 72 and 74 of the supporting principal extrusion 46, and a pair of inwardly extending upper and lower L-shaped arms 106 and 108 defining

upwardly and downwardly opening elongate slots 112 and 114 in which the short flanges 72 and 74 of the principal extrusion 46 matingly extend. The arms 106 and 108 also define upwardly and downwardly extending terminal web sections 118 and 120 which seat in the downwardly and upwardly-opening slots 78 and 80 formed in the principal extrusion 46. Conveniently, the secondary, outer extrusion 100, 102 may be used as a facing to provide color and also decoratively to accent the extrusion assembly.

Figure 5 shows, in perspective, another secondary extrusion 130 which may be used in conjunction with the principal extrusion 46. The latter defines a curved or arcuate outer face 132 integrally formed with upwardly and downwardly opening L-shaped web structures 134 and 136 similar to those found in the flat-faced extrusion 100, and used for the same purpose and in the same manner previously described.

A modified form of the principal extrusion 46 shown in Figures 2 and 3 and described in detail above is shown in Figure 7 as extrusion 140. The latter differs from extrusion 46 in that it includes, as an addition, a downwardly extending, inwardly directed, generally L-shaped extension 144. The latter is integrally formed at an outermost lower corner 146 of the extrusion of Figures 7 and depends therefrom. That is, Figure 7 depicts a modified Figures 2 and 3 extrusion consisting of a front vertical wall 148, an inwardly directed horizontal wall segment 150, the latter terminating in an upwardly directed diminutive wall or rib-like bead 154. The other parts of the extrusion 140 are essentially the same as those of extrusion 45, and are similarly identified.

There is shown in Figure 8 an extrusion segment 160 similar to that depicted in Figure 6, but with the lower arm 60 of the extrusion removed and the groove 64 associated therewith dispensed with.

Figure 9 illustrates a segment of an extrusion 170 similar to the extrusion 160 of Figure 8 but with the free portion of the top wall 58 and its associated groove 62 eliminated.

Figure 10 shows a lineal segment of an extrusion 180 similar to the extrusion 140 of Figure 7, but with the protruding free portion of the top wall 58 and the associated groove 62 eliminated.

Referring now to Figure 11, there is shown, in perspective, a lineal fragment of another principal embodiment of the present invention. The extrusion 190 defines an elongate compound body delineating multiple principal channels. These channels include a pair of channels 200 and 202 which open normally of one another. It will be appreciated that the embodiment of the invention described herebelow is an extrusion finding utility as a unique joiner operative to cover, protect, decorate, and positively and firmly to secure in place and to stabilize end edge portions of two separate and distinct sheets or panels. Relevant is the fact that these panels are so oriented as to present end portions which are essentially in abutment and are disposed to one another at 90 degrees. The extrusion described may be disposed in a horizontal mode or in a vertical mode, or in any other angular orientation, as may be desired.

Referring further to Figure 11, the first channel 200, shown as opening sideways or laterally, has vertically-spaced lower and upper horizontal walls 208 and 210 integrally joined at their rear by a vertical wall 212, the latter being part of and coextensive with a lineally extending thickened, vertically-disposed section or body 216 of the extrusion 190. A rearward portion 218 of the upper horizontal wall 210, remote from the channel 200, is angled downwardly or inwardly. Integrally formed with and extending rearwardly of the lower wall 208 of the first channel 190 is a generally horizontally extending thickened portion 222 of the extrusion 190, integrally formed with the vertical body portion 216. At its rearward, longitudinally-extending extremity, the body 222 is integrally formed with and terminates in a vertical wall 226. Depending from the lower wall 208 of the channel 200 and essentially in alignment with the rear wall 212 of the first channel 200 is a vertical wall 230 spaced from and paralleling the opposed wall 226. An upper extremity of the wall 226 is curved inwardly to form a longitudinally extending

lip-like wall portion 232. The walls 226 and 230, together with an essentially planar undersurface 234 normal to the walls 226 and 230, serve to form and define the second channel 202 of the extrusion 190. The spaced and angled upper and lower lineally-extending wall sections 218 and 232 frame a co-extensive opening to a linearly extending cavity, and serve to receive therebetween, and to support and retain in the extrusion, an auxiliary decorative panel, band, or ribbon, or other selectable insert, in a manner previously described. Optionally, one may eliminate walls 210 and 220, if desired.

Referring now to Figure 12, there is shown another extrusion 250 fabricated in accordance with the present invention. The extrusion 250 has a pair of overlying, spaced, generally-parallel upper and lower walls 254 and 256. These, together with a transversely-disposed connecting rear wall 260 presenting a planar face, define a rearwardly opening channel 262 in which a co-extensive elongate edge portion of a table top, panel, or sheet may be grippingly engaged. In the extrusion illustrated, the upper and lower walls 254 and 256 extend beyond the vertical wall 260 of the extrusion 250 to terminate, respectively, in downwardly and upwardly curved wall sections 264 and 266. The latter define an elongate opening or channel 270 into which a decorative band, tape, or ribbon, etc. may be inserted for secure retention as a closure.

As previously indicated, it is appreciated that in some situations the spacing of the panels or arms of a channel from one another may be somewhat greater than the thickness of the marginal edge of the table top, panel or sheet to be sandwiched into the elongate channel of the extrusion. In such situations, and as illustrated in Figure 3, one may solve or alleviate the problem through the employment of a wedge or shim. The latter is inserted in the channel of the extrusion between a top surface of the lower panel thereof and the bottom surface of the edge portion of the counter top, table top or other sheet to be inserted into the enveloping channel of the extrusion, to extend therealong. Several different embodiments of such wedges are illustrated in Figures 13 through 16.

Figure 13 is a perspective view of a lineal fragment of a wedge, shim, or shim bar or band 66 of the type finding utility in the practice of the present invention.. As viewed in its fully inserted mode, the shim 66 has a vertically thickened edge portion 280, a stepped, principal body section 282 of substantial area and which may taper to a slightly reduced vertical thickness. The wedge 66 terminates in a beveled end or edge portion 284. In preferred embodiments of the invention, and as shown, for example, in Figure 3, the thickened innermost directed portion 280 of the wedge 66 seats in a cooperating groove 64 in the body 50 of the extrusion.

Other, somewhat varied physical configurations of the wedge or shim component of the invention, are shown in Figures 14,15, and 16. In the wedge 290 of Figure 15 the inwardly disposed edge section 292 is of a somewhat lesser thickness than that of Figure 13, and the thinned opposite end portion or edge 296 is curved and smooth rather than angled. Figure 15 depicts a wedge 300 in which there is no thickened inserted end portion. As in the wedge of Figure 14, the main body section 302 is essentially flat. The flat body section 302 ends in a slightly curved, faceted thin edge 304. In the shim or wedge 310 of Figure 16 the entry edge 312 is of a reduced thickness as compared with a broad, flat and relatively thick principal body area 314. At its end 316 remote from the insertion end 312, the edge 316 of the insert 310 takes the form of an angled section or facet 318 terminating in a vertical step or straight edge 320.

Referring now to Figure 17, there is shown, in perspective, a segment of a lineal extrusion 330 having a generally boxed C-shape in cross section. The extrusion 330 has a principal wall 332, a top wall 336, and a bottom wall 338. The top and bottom walls 336 and 338 extend in the same direction, from the top and from the bottom of the principal wall 332 and perpendicular thereto. The top and the bottom walls 336 and 338 are integrally formed, at free edges thereof remote from the principal wall 332, with relatively short, stub-like wall segments 342 and 344. The latter, which are perpendicular to respective top and bottom walls 336 and 338, do not come together or meet. Rather, they

leave an open space 348 between free ends thereof to define an entry or passageway 346 into a lineally-extending chamber defined by the generally C-shaped extrusion 330. In accordance with the practice of the subject invention, the extruded channel 330 finds utility as a coupler for joinder of two cooperating extruded sections.

Other embodiments of the extrusion of the invention are shown in Figures 18 through 21. These extrusions join panels, sheets, or boards to one another either in an in-line configuration (Figure 19), or at 90 degrees to one another (Figures 18 and 21). They form, for example, an inside corner (Figure 18). Some of the extrusions serve primarily to augment the strength of the components to which they are attached (Figure 20). Figures 18, 19 and 29 also include elongate slot-defining grooves for receiving decorative ribbon-like bands or other accent structures or accessories, as previously identified and described.

The extrusion 350 of Figure 18 comprises an outwardly-presented first U-shaped channel 250 defined by a pair of spaced upper and lower plates 356 and 358. The latter are joined to one another at inward limits thereof by an integrally-formed vertical wall 360 having an enlarged base 362. At its free end 356 remote from the top wall 360, the upper plate 356 is integrally formed with a coextensive upwardly-directed flange or edge section 368.

Integrally formed with the vertical wall 360 and coextensive therewith is a second wall section 372. The latter has an enlarged base portion 374 surmounting the internal plate or base 356 of the first channel 352. The second vertical wall 372 supports a second floor or base 380 which, together with two spaced, parallel and upwardly-projecting walls 384 and 386, defines a second U-shaped channel 388. Extending outwardly of the channel boundary wall 384 and therealong at an upper end thereof is a downwardly angled web 392 extending along the lineal expanse of the extrusion 350. The flanges or webs 368 and 392 cooperate to secure in place a decorative ribbon or accent strip (not here shown), such as the strip 100 or 102 depicted in Figures 2, 3 and 4.

It will be understood that the two channels 352 and 358 function to receive therewithin end sectors of two separate and distinct sheets or panels (such as shown in Figures 2 and 3, which are disposed to extend normally of one another.

The extrusion 400 of Figure 19 comprises a pair of parallel walls 402 and 404 separated and spaced from one another by a horizontal plate 408 bridging between the walls 402 and 404 and extending lengthwise therealong at a mid-zone thereof. The structure described defines a pair of upwardly and downwardly opening channels 410 and 412 for nestingly receiving therewithin between the walls 402 and 404 a pair of in-line, vertically-disposed sheets or panels in a manner depicted in Figures 2 and 3.

The wall 402 of the extrusion 400 is integrally formed at upper and lower extremities thereof with outwardly-projecting parallel webs 416 and 418 terminating respectively in downwardly and upwardly directed flanges 420 and 422 to define a channel 424 for accommodating a decorative band or accent strip in a manner previously described with reference to Figures 2, 3, 4, 5, and 6.

An extrusion 440 similar to that 170 appearing in Figure 9 is shown in Figure 20. The extrusion 440 comprises a block-like body 442 generally rectangular in transverse cross section and formed with a wall 446. The latter is cut away to provide a downwardly directed fragmentary front wall 448, and a longitudinally extending, downwardly opening upper groove 450. At its lower end the body 442 of the extrusion 440 is formed with a bottom wall 446 of the extrusion 449. Formed in the bottom wall 456 and opening upwardly is a second groove or channel 460 in vertical alignment with the downwardly opening upper groove 450. The second groove 460 formed in the lower portion of the body 442 of the extrusion 440 is delineated by a short upwardly projecting fragmentary front wall 458 in vertical alignment with the upper front wall 448. The grooves 450 and 460 are adapted to receive therewithin and to retain a snap-in band, ribbon, accent strip or decorative facing, in a manner previously described with reference to Figures 2, 3 and 4.